BUILDING TRUST

PRODUCT DATA SHEET

# Sikagard®-680 S Betoncolor

PROTECTIVE ANTI-CARBONATION COATING FOR CONCRETE

## DESCRIPTION

Sikagard®-680 S Betoncolor is a one-component solvent containing coating, based on methacrylic resins resistant to weathering, alkalis and ageing. It is available in clear and coloured grades for use on mineral substrates including concrete and other cementitious surfaces.
Sikagard®-680 S Betoncolor protects concrete against aggressive atmospheric influences and promotes a self-cleaning effect on the treated surfaces. It does not adversely influence the characteristic texture of the concrete.
Sikagard®-680 S Betoncolor complies with the requirements of EN 1504-2 as a protective coating.

## USES

Sikagard®-680 S Betoncolor is used for protection and enhancement of concrete and other cementitious materials on building and infrastructures elements.
Sikagard®-680 S Betoncolor clear glaze is a colourless material drying to a glossy coat, suitable as refresher and protective coating for exposed aggregate concrete.
Sikagard®-680 S Betoncolor top coat is a top coating, drying to a mat finish, available in a large number of decorative standard and almost unlimited special colour shades.

- Suitable for protection against ingress (Principle 1, method 1.3 of EN 1504-9),
- Suitable for moisture control (Principle 2, method 2.3 of EN 1504-9)
- Suitable for increasing the resistivity (Principle 8, method 8.3 of EN 1504-9)

## CHARACTERISTICS / ADVANTAGES

- Sikagard®-680 S Betoncolor provides excellent weather resistance and is based on a methacrylic resin with fast evaporating solvents
- Due to its quick drying properties, the coating is rain resistant within a short time
- Almost no change in the texture characteristics of the concrete surface
- Sikagard®-680 S Betoncolor protects the concrete against aggressive atmospheric influences, which can penetrate into the concrete in the form of salts or gases
- Very high diffusion resistance against carbon dioxide and, therefore reduces considerably the rate and depth of carbonation of the concrete
- Water vapour permeability is not adversely affected
- Dirt pick up is reduced and the concrete is no longer discoloured by rain
- Suitable for sealing of green concrete in civil engineering works

## APPROVALS / CERTIFICATES

- Report Nr.:A 2216/C1 dated 22. 11. 1990, IBAC Aachen
- Report Nr.:A 3026/B2 dated 14. 06. 1996, IBAC Aachen
- Report Nr.:P 3132-1 dated 27. 08. 2003, Polymer Institute
- This system is registered as product a system according to ZTV-ING part 3, section 4
- Coating for surface protection of concrete according to EN 1504-2:2004, Declaration of Performance 02 03 03 02 001 0 000001 2017, certified by notified factory production control certification body 0921, certificate of conformity of the factory production control 0921-BPR-2017, and provided with the CE marking.

## PRODUCT INFORMATION

| | | |
|---|---|---|
| **Composition** | Acrylate resin in solvent | |
| **Packaging** | Clear Glaze | 10 lt pail |
| | Top Coat | 10 lt pail |
| **Appearance / Colour** | Clear Glaze | Clear liquid |
| | Top Coat | Thixotropic past available in almost any colour shade |
| **Shelf life** | 36 months from date of production if stored properly in undamaged and unopened original sealed packaging. | |
| **Storage conditions** | Store in cool and dry conditions. Protect from direct sunlight and frost. | |
| **Density** | Clear Glaze | ~0.9 kg/l (at +20 °C) |
| | Top Coat | ~1.4 kg/l (at +20 °C) |
| | Dependent on colour shade, small variations are possible. | |
| **Flash Point** | Clear Glaze | +25 °C |
| | Top Coat | +30 °C |
| **Solid content by volume** | Top Coat: | ~45 % |

## TECHNICAL INFORMATION

| | | | |
|---|---|---|---|
| **Diffusion Resistance to Water Vapour** | Dry film thickness | d = 140 µm | (AS/NZS 4548.5) |
| | Equivalent air layer thickness | $S_D$, $H_2O$ = 1.4 m | |
| | Diffusion coefficient $H_2O$ | $\mu H_2O$ = 10100 | |
| | Requirement for breathability | $S_D$, $H_2O \leq 4$ m | |
| **Carbonation Resistance** | Dry film thickness | d = 140µm | (AS/NZS 4548.5) |
| | Equivalent air layer thickness | $S_D$, $CO_2$ = 329m | |
| | Diffusion coefficient $CO_2$, $cm^2/sec$ | $\mu CO_2 = 7.0 \times 10^8$ | |
| | Requirement for carbonation resistance | $S_D$, $CO_2 \geq 50$ m | |
| | Equivalanr Thickness of Concrete ($S_c$), cm | 82 | |

## SYSTEMS

**System Structure**

**Sikagard®-680 S Betoncolor Clear Glaze**

| | |
|---|---|
| As protection and enhancement of exposed aggregate concrete | 2 x Sikagard®-680 S Betoncolor Clear Glaze |

**Sikagard®-680 S Betoncolor Top Coat**

| | |
|---|---|
| In normal situation | 2 x Sikagard®-680 S Betoncolor Top Coat |
| When using bright yellow and red colour shades | 3 x Sikagard®-680 S Betoncolor Top coat |
| When combined with hydrophobic impregnation priming coats | 1 - 2 x Sikagard®-700 S<br>2 x Sikagard®-680 S BetoncolorTop Coat |

## APPLICATION INFORMATION

**Consumption**

Approx. consumption per application kg/m² per coat

| Product | Per Coat |
|---|---|
| Sikagard®-680 S Betoncolor Clear Glaze | ~ 0.15 kg/m² |
| Sikagard®-680 S Betoncolor Top Coat | ~ 0.20 kg/m² |

**Layer Thickness**

Minimum required dry thickness to achieve full durability characteristics ($CO_2$ diffusion, adhesion after thermal cycling, etc.) = 101 µm.
Maximum thickness not to go beyond the $H_2O$ equivalent air thickness of 5 m = 290 µm.

**Ambient Air Temperature**

+5 °C min. / +35 °C max.

**Relative Air Humidity**

< 85 %

**Dew Point**

Substrate and ambient temperature must be at least 3 °C above dew point.

**Substrate Temperature**

+5 °C min. / +35 °C max.

**Waiting Time / Overcoating**

Waiting time between coating:

| Temperature | Time |
|---|---|
| +10 °C | 8 hours |
| +20 °C | 5 hours |
| +30 °C | 3 hours |

Note: Refresher coats of Sikagard®-680 S Betoncolor can be applied without priming if the existing coating has been thoroughly cleaned.

**Curing Treatment**

Sikagard®-680 S Betoncolor does not require any special curing but must be protected from rain for at least 1 hour at +20 °C (dust dry in 30 minutes at +20 °C).

**Applied Product Ready for Use**

Full cure: ~5 days at +20 °C

## APPLICATION INSTRUCTIONS

### SUBSTRATE QUALITY / PRE-TREATMENT

**Exposed concrete without existing coating**
The surface must be dry, sound and free from loose and friable particles.
Suitable preparation methods are steam cleaning, high pressure water jetting or blastcleaning.
New concrete must be at least 28 days old.
(e.g. Sika® MonoTop®-723 N, Sikagard®-720 EpoCem® etc.) can be used – refer to the respective product data sheet. Allow a curing time of at least 4 days before coating (except when the EpoCem is used, then coating can be applied within 24 hours).

**Exposed concrete with existing coating**
Existing coatings must be tested to confirm their adhesion to the substrate - adhesion test average > 1.0 N/mm² with no single value below 0.7 N/mm².
Refer to the relevant Method Statement for more details

**Inadequate adhesion**
Existing coatings must be completely removed by suitable methods and the substrate must be sufficiently sound and suitable to be coated as above.

**Adequate adhesion**
Thorough cleaning of all surfaces by means of steam cleaning or high pressure water jetting. Normally, Sikagard®-680 S Betoncolor can be applied on existing coating without any priming - It is recommended to carry out adhesion testing on a small scale prior to full scale operations.
Note: Existing water-based coating, even well adhering, must be removed completely prior to apply Sikagard®-680 S Betoncolor.

### APPLICATION

Sikagard®-680 S Betoncolor is supplied ready for use. Stir thoroughly prior to application.
On very absorbent and/or porous substrate, it is recommended to add about 50% of Sikagard®-680 S Betoncolor Clear Glaze to the first coat of Sikagard®-680 S Betoncolorr Top Coat in order to strengthen the substrate and to reduce the risk of a patchy appearance.
Sikagard®-680 S Betoncolor (Clear Glaze and Top Coat) can be applied by brush or short-piled lambskin roller.
The top coat can also be applied by airless spray:
Spray pressure 150 bars, nozzle bore 0.38–0.66 mm, spray angle 50–80°.

### CLEANING OF EQUIPMENT

Clean all tools and application equipment with Sika

Thinner C immediately after use. Hardened / cured material can only be removed mechanically.

## IMPORTANT CONSIDERATIONS

Do not apply when there is:
- Expected rain
- Relative humidity > 85%
- Temperature below +5 °C and/or below dew point

For lightweight concrete façade, we recommend a crack bridging intermediate coat such as Sikagard®-550 W Elastic.
In marine environments or if the concrete surface is exposed to splashes of de-icing salts,Sikagard-700 S is recommended as water repellent primer.
On fair faced and precast concrete without adequate pore filler (e.g. Sika® MonoTop®- 723 N or Sikagard® - 720 EpoCem®, bubbles may occur if the application is carried out during rising temperatures.
The system is fully resistant for all normal atmospheric exposures and rainfall.
Splashed water containing de-icing salts or sea water may cause a loss of gloss and colour shade variation. However the protective performances are not adversely affected.
Dark colour shades (especially black, dark red and blue, etc.) may fade more rapidly than other lighter tone colours. Refreshing coat might be required at earlier interval than usual.

## BASIS OF PRODUCT DATA

All technical data stated in this Product Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

## LOCAL RESTRICTIONS

Please note that as a result of specific local regulations the declared data for this product may vary from country to country. Please consult the local Product Data Sheet for the exact product data.

## ECOLOGY, HEALTH AND SAFETY

For information and advice on the safe handling, storage and disposal of chemical products, users shall refer to the most recent Safety Data Sheet (SDS) containing physical, ecological, toxicological and other safety-related data.

### DIRECTIVE 2004/42/CE LIMITATION OF EMISSIONS OF VOC

According to the EU-Directive 2004/42, the maximum allowed content of VOC (Product category IIA / i type sb) is 600 (Limit 2010) for the ready to use product.
The maximum content of Sikagard®-680 S Betoncolor is < 500 g/l VOC for the ready to use product.

## LEGAL NOTES

The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika's recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the product's suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.

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